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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,395	03/28/2001	Takashi Kaku	FUJZ 18.525	7108
26304	7590	07/16/2004	EXAMINER	
KATTEN MUCHIN ZAVIS ROSENMAN			AHN, SAM K	
575 MADISON AVENUE			ART UNIT	
NEW YORK, NY 10022-2585			PAPER NUMBER	

2634

DATE MAILED: 07/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/819,395

Applicant(s)

KAKU ET AL.

Examiner

Sam K. Ahn

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 12-18 and 24 is/are rejected.
- 7) ☒ Claim(s) 7-11 and 19-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/17/04, 3/28/01.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 3-11 and 15-24 are objected to because of the following informalities:

In claims 3-11 and 15-24, insert a comma before the word "wherein" in each of the claims.

In claim 8, line 2, delete "a zero-point" and insert "the zero-point".

In claims 11 and 23, lines 3 and 4, respectively, delete "the frequency shift amount" and insert "the amount of the frequency shift".

In claims 11 and 23, lines 4 and 5, respectively, delete "the frequency bandwidth" and insert "the desired frequency bandwidth".

In claim 19, line 6, delete "the original" and insert "an original".

It appears that the limitation of claims 21 and 22 are equivalent.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3,5,12-15,17 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Rudolph et al. U.S. Pat. No. 6,501,804 B1.

Regarding claims 1, 2, 13 and 14, Rudolph discloses a noise canceling method and apparatus (see Fig.1a and 1b) comprising, means for periodically inserting a zero-point into a signal on a transmission side (see Fig.2a wherein test sequences lying on a zero line of the x-axis are inserted in the signal to be transmitted to the receiver, note col.1, line 61 - col.2, line 5), means for interpolating a noise component from a received signal including a signal in which a time, an amplitude, and a phase are specified (note col.3, lines 4-9 and col.4, lines 9-28) by using the zero-point (test sequence) on a reception side, and means for canceling or subtracting the noise component from the received signal (see 88 in Fig.1b and note col.4, lines 58-62).

Regarding claims 3 and 15, Rudolph teaches all subject matter claimed, as applied to claim 2 or 14. Rudolph further teaches wherein one or more zero-points are inserted at intervals of an integer number of samples. (see Fig.2b wherein the test sequences are inserted at interval of one data block)

Regarding claims 5 and 17, Rudolph teaches all subject matter claimed, as applied to claims 1-3, 13. Rudolph further teaches implementation of the noise canceling system in a digital broadcasting environment using AM bands. (note col.1, lines 6-10) And therefore, it is inherent that the system of Rudolph is

implemented in a wireless environment having a transparent transmission line transceiving using AM bands.

Regarding claims 12 and 24, Rudolph teaches all subject matter claimed, as applied to claims 1, 2, 13 and 14. Rudolph further teaches wherein an automatic equalizer may be provided at a former or latter stage of a noise cancellation, wherein the equalizer is well-known in the art to be used as a function to remove intersymbol interference.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 4,6,16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rudolph et al. U.S. Pat. No. 6,501,804 B1.

Regarding claims 4 and 16, Rudolph teaches all subject matter claimed, as applied to claims 5 or 17. Rudolph further teaches wherein the test sequences are variable, since data block may be replaced by a gap when greater periodic interval is used, (note col.2, lines 43-65). And although Rudolph does not teach

wherein the variable test sequences interval is determined by the signal quality, it would have been obvious to one skilled in the art at the time of the invention to increase and decrease the number of test sequences being transmitted to the receiver depending on the signal quality as the purpose of test sequences are to eliminate noise. Therefore, during heavy noise in the signal received, frequent test sequences may be transmitted. And furthermore, since the transmitter is not aware of the signal quality received by the receiver, the receiver sending the information to the transmitter in regards to the signal quality is well-known in the art. Therefore, it would have been obvious to one skilled in the art at the time of the invention to inform the signal quality received to the transmitter for the purpose of adjusting the frequency of test sequences to be transmitted.

Regarding claims 6 and 18, Rudolph teaches all subject matter claimed, as applied to claims 5 or 17. And although Rudolph does not teach wherein the transparent transmission line comprises a Nyquist transmission line, it would have been obvious to one skilled in the art at the time of the invention to design a system having a Nyquist transmission line for the purpose of supporting a well-known Nyquist theorem.

Allowable Subject Matter

4. Claims 7-11 and 19-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims, and overcome the claim objections.

5. The following is a statement of reasons for the indication of allowable subject matter:

Present application discloses a noise canceling system comprising transmission of zero-points along with the data in the signal. The zero-points are inserted where the number of insertions may be variable depending on the signal quality. The receiver uses the zero-points to detect the noise and cancel the noise from the signal received. Closest prior art, Rudolph teaches all subject matter claimed. However, Rudolph does not teach or suggest in combination wherein during the detection of noise, interpolation is performed comprising shifting the frequency of the signal, decimating, and further shifting the frequency in order to generate the noise from the signal received in order to properly cancel the noise.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Thomson et al. teach cancellation of noise using interpolation in the receiver.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Ahn** whose telephone number is **(703) 305-0754**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

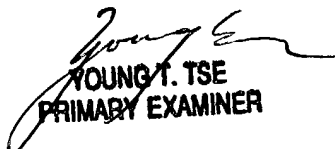
or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Sam K. Ahn
7/9/04


YOUNG T. TSE
PRIMARY EXAMINER